

Page 1, after line 4, insert the following heading:

--2. Description of the Related Art--.

Page 2, after line 23, insert the following headings and sections:

--SUMMARY OF THE INVENTION

The invention relates to an isolated DNA sequence encoding a polypeptide having the biological activity of amorpha-4,11-diene synthase. The DNA sequence can be used for the transformation of bacteria, yeasts and plants for the production of amorpha-4,11-diene, a specific precursor in the synthesis of artemisinin, in the respective organisms. The invention also relates to these organisms.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 depicts the structural formula of artemisinin;

Fig. 2 depicts the postulated biosynthetic pathway of artemisinin in *A. annua*;

Fig. 3 depicts the structure of DHAA and arteannuic acid, and the proposed pathway for the conversion of amorphadiene into DHAA;

Fig. 4 depicts the structure of amorpha-4,11-diene;

Fig. 5 depicts radio-CG chromatograms of [³H] –FPP assays;

Fig. 6 depicts mass spectra of reference amorphadiene and the FPP assay with terpene cyclases (synthases) purified from *A. annua*;

Fig. 7 depicts a probe generated by PCR and cloned into pGEM 7Zf⁺;

Fig. 8 depicts a nucleotide sequence and deduced amino acid sequence of the probe (538 bp) generated by PCR with primers A and B;

Fig. 9 depicts a released plasma of a positive clone isolated from the cDNA library of induced *A. annua*;

Fig. 10 depicts the nucleotide sequence and deduced amino acid sequence of a positive clone (amorphadiene synthase encoding gene) isolated from the cDNA library of induced *A. annua*;

Fig. 11 depicts part, between start and stop codon, of the amorphadiene synthase encoding gene cloned in the NcoI/BamHI site of the expression vector pET 11d;

Fig. 12 depicts a DNA sequence which codes for a polypeptide having the biological activity of the enzyme amorphadiene synthase;

Fig. 13 depicts SDS-PAGE gel electrophoresis results showing expressed amorphadiene synthase;

Fig. 14 depicts flame ionization detector (FID) signals and radio-GC chromatograms of amorpha-4,11-diene and farnesol;

Fig. 15 depicts the chemical conversion of amorphadiene into dihydroarteannuic acid; and

Fig. 16 depicts the determination of the molecular weight of amorpha-4,11-diene synthase by size-exclusion chromatography (gel filtration).

DESCRIPTION OF THE PREFERRED EMBODIMENTS--.

Page 4, line 1, delete "al" and substitute therefor --all--.

IN THE CLAIMS:

Please cancel claims 1-42 and rewrite them as new claims 43-86 as follows.

--43. An isolated DNA sequence encoding a polypeptide having the biological activity of amorpha-4,11-diene synthase.